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ABSTRACT

A common pitfall is the assumption that the teaching of reading in the content areas is an esoteric mystery to be solved only by the reading specialist. The teacher of a content area should guide his students in the application of basic skills and study methods to the materials used. A second pitfall is the assumption, often made by the unskilled teacher of reading, that the best place to begin reading instruction is the extensive training in phonics. The good reader combines phonic skills, context clues, and sight vocabulary. A third pitfall is the tendency to teach reading as if this highly complex mental activity required little more than just a bag of devices. The possibilities for improving the teaching of reading should include putting into practice the teaching of reading as a process. The discerning teacher of a content area uses in part the student's self as content, thereby placing the teaching of reading as a process in as broad a context as possible. A second and related possibility for improving reading instruction in the content areas is the building of instruction upon significant leads from linguistics. A third possibility is bridging the gap between the spoken language, experiences, and the variety of patterns within printed language. (WR)

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TEACHING READING IN THE CONTENT AREAS: THREE PITFALLS, THREE POSSIBILITIES

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INTRODUCTION

At one time in the school curriculum, the term "content area" referred to one of four basic subjects--math, science, English, or social studies. Today the phrase is often extended to include business education, foreign languages, home economics, industrial arts, music and still other fields. Regardless of the area of study, all school subjects at one time or another require students to handle specialized forms of language.

General reading competence, however, does not automatically include the particular skills and habits needed to cope with such printed information. These abilities are so important that their development cannot be left to chance--nor to the capricious notions of either the teacher or the student. Thus, sound instruction in reading must be more than mere exposure to content, more than mere reading assignments. Sound instruction in reading must also be a matter of helping students benefit from the reading experience. Only the teacher who has attempted to learn how can do this. In learning how, the teacher should avoid certain pitfalls and test-out certain possibilities.

PITFALLS

The first pitfall is the assumption that the teaching of reading in the content areas is an esoteric mystery to be solved only by the reading specialist. Some content teachers argue that they have chosen to be content teachers, not reading teachers, that they are happy as content teachers, and that, more likely than not, they will remain content teachers. Constance McCullough (1973) reminds teachers that "We are all bird dogs following semi-true and false scents,

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and reading, our prey, is very clever." One false scent is the content teacher's assumption that sending students to the reading specialist will solve all the student's reading problems (Sawyer, 1974). This assumption is complementary to the reading specialist, but it is, nevertheless, a false scent. The view holds the reading specialist and the school's basic reading program totally responsible for reading improvement. When the teaching of reading becomes limited to reading specialists and reading classes, it burgeons out of reasonable proportion.

Ironically, the development of reading competence is best achieved when the student's focus is on the content of the material and not on reading itself (Goodman, 1970). Psychology of learning has long pointed out that what is taught is most effective within the context in which it is used. The content classroom provides a place where reading abilities may be developed functionally. The implications are apparent. Every teacher of whatever subject and level must be prepared to help students meet new demands in reading and to develop the special strategies which these demands require.

A related and an additional false scent is the content teacher's assumption that he must be first trained as a reading specialist if he is to help students meet such demands in reading. Of course some training is necessary, but the role of the reading specialist and the role of the content teacher <u>as a teacher of reading</u> must not be equated nor confused. Whenever they are, content teachers tend to become even more apprehensive about their own application of some instruction in reading. Most continue, nevertheless, to assign vast sums of reading each day to keep their students abreast of new knowledge.

Teachers can no longer ignore the dual responsibility of the basic reading program and instruction in the content areas. The role of the reading specialist is to teach the skills that are fundamental to all reading of whatever kind. On the other hand, the teacher of a content area should guide his students in

the application of basic skills and study methods to the materials used. If content teachers understand and accept this delineation of roles, then the teaching of reading becomes a responsibility faced by all teachers.

The second pitfall is the assumption often made by the unskilled teacher of reading that the best place to begin reading instruction is with extensive training in phonics. The time and place for instruction in phonics must be put in proper perspective. Instruction in phonics does have its place in reading, especially in beginning reading. Heilman (1968) warns, however, that the history of reading instruction in America is a chronicle of frustration which stems in part from our predilection to make reading consist exclusively of letter-sound analysis. The good reader combines phonic skills, context clues, and sight vocabulary because he realizes that these skills in reading are tasks that live within one another.

Moreover, at the secondary level, the study of phonics is only one of many ways to the analysis of polysyllabic words. Of course we have words that divide phonically into syllables. But we also have many non-phonetic words. We have, in addition, compound words. And we have words that share similar roots. For many years, Olive Niles (1973) has continuously stressed more than phonetic ways to word recognition, among them the use of context clues and structural analysis.

One reading theorist, Frank Smith (1973), even challenges the assumption that to comprehend in reading, a student must first decode to sound. According to Smith, sound, if produced at all, comes after the comprehension of meaning. Similarly, Goodman (1970) contends that it is not the symbols, phonemes, or letters, but the systematic structuring of these symbols that makes comprehension of meaning possible. In Goodman's model, the good reader samples, predicts, tests, and confirms--strategies that help him select only the most productive cues within the structure of words and within the language structure.

The third pitfall is the tendency to teach reading as if this high complex mental activity required little more than just a bag of devices. To improve comprehension in reading, the content teacher is often advised to identify levels of comprehension and to lead his students to analyze content, in part, by applying these levels to the materials being read. Through the preparation of multi-level reading guides, the content teacher structures the reading experiences of his students in orderly steps, levels, or taxonomies. This method of improving reading can become an artificial lock-step device.

Comprehension in reading does, of course, take place at different levels of cognition, and in his interaction with print, the student is indeed confronted with phenomenon that he must put together: the letter symbols and the concepts of meaning behind the symbols. When a student reads for meaning, however, he may read for many purposes at once. The student's contribution to the reading comprehension experience--his personal involvement--his creative, critical, and cognitive juices--often stir inside him simultaneously as he reads. Hence, his reading comprehension is often the result of a spontaneous way of happening. Thus, reading comprehension must involve more than just the systematic progression through sequential and cumulative levels. Reading comprehension guides, however, may enable contents teachers to use them as informal inventory checks for finding the range of cognition in his students. The content teacher must remember, nevertheless, that this device for improving reading comprehension--if not used judiciously, can produce knowledge "about" the content rather than a capacity to read books and respond to them.

Another device in the application of fragmented skills to particular passages of print. According to Niles (1973), there is nothing wrong with breaking the teaching of reading into parts as long as the parts are put back together again. However, at one time or another, many teachers are prone to apply

reading skills to particular passages of print in a piece-meal fashion. The student learning to read under these conditions does so by building block upon block of factual knowledge, and usually through drills, rules, memorization, and classifications. To the student, the teaching of isolated reading skills will not be highly motivating. Moreover, the teaching of reading skills one by one usually focuses on short term goals. Thus, the content teacher who works to improve reading solely within this framework often removes the student to the periphery of more meaningful reading experiences. Consequently, he defeats the ultimate goal of sound reading instruction--to produce self-realized, critical readers.

Some content teachers feel more secure with still other devices, such as pre-packaged reading materials and the "speed" machine--with rate builders, power builders, reading recorders, and tachomatic films. Without doubt, there are times when these materials and machines do reinforce vocabulary development, speed, and comprehension. And, indeed, there are times when particular students in particular circumstances gain from some supervised instruction in a reading laboratory. However, whatever the benefits derived from these materials and machines, they should not comprise a total reading program in the school. Nor should they be used to teach reading in a content class at the expense of keeping the student from reading with power. When a student reads for power, he reads beyond exposition. He reads for reasons that go beyond mere recognition and recall. He reads with power to extend, to realize, to participate, to experience--if only vicariously. Therefore, a cavaet which the content teacher must continuously remind himself is this: "I must be careful not to give my students just a bag of devices."

POSSIBILITIES

What then, are other alternatives for improving the teaching of reading in the content areas? The first possibility is to put the cliche 'teaching reading as a process" into practice. Over the years, numerous experts have

defined reading to suit their own interests and needs. These definitions range from mere cracking the code, or barking at words, to new psycholinguistic definitions of reading. One of the earlier and more powerful explanations of the reading process is one penned by Arthur Gates (1949).

> Reading is not a simple mechanical skill; nor is it a narrow scholastic tool. Properly cultivated, it is essentially a thought process. However, to say that reading is a "thought-getting" process is to give it too restricted a definition. It should be developed as a complex organization of patterns of higher mental processes. It can and should embrace all types of thinking--evaluating, judging, imagining, reasoning, and problem-solving. Indeed, it is believed that reading is one of the best media for cultivating many techniques of thinking and imagining.

Although it is still not known exactly what constitutes the reading process, recent research in psycholinguistics using information-processing models offers even more promise for a clearer understanding of this complex activity. Moreover, the implications of these recent models supply a strong rationale for developing teaching strategies in reading that enable the reader to decode directly to meaning. The implications are of much significance for improving the teaching of reading at all levels--especially in the upper grades. Instead of beginning instruction in reading with a set of discrete and fragmented skills, the discerning teacher makes use of skills involved in reading in a different way. He does--to repeat--put certain reading skills to work, but they are those reading skills that go to work within the framework of meaning--getting strategies. Thus, the student, instead of becoming a passive identifier of letters and words, becomes an actvie searcher for meaning. But to succeed in reading, the student must make use of both visual and non-visual information.

Non-visual information transcends the text or printed material being studied. First, non-visual information involves the student's ability to conceptualize and his previous experiences and reading, particularly in relation to the topics of the material at hand, Second, non-visual information involves the student's

prior knowledge of language and familiarity with the structures and patterns within forms of written discourse. Visual information, on the other hand, involves similar yet other complex strategies of information-processing. The redundancies within printed language greatly influences the student's task of correctly making decoding responses. Redundancy in print occurs at a number of levels. There is featural redundancy in individual letters. For example, some letters are curved while others are straight. The same kind of featural redundancy occurs in words. There is also much redundancy within the structure of words because in the English language patterns of features tend to occur only in certain combinations. These highly consistent patterns of features are examples of orthographic redundancy. Redundancy also extends across sequences of words and thus involves syntactic and semantic constraints.

Reading in the content areas is an activity often done to obtain information--or, in other words, to reduce uncertainty. However, teachers must remember that the student who is a skilled reader minimizes his use of feature analysis and maximizes his use of graphic redundancy to reduce uncertainty. Goodman and Smith (1973) theorize that this kind of student uses the most direct route and as few cues as necessary to arrive at his goals--reading comprehension. He does not need to make use of all the information available to him for reading comprehension to occur. His understanding of language structures and his understanding that every bit of information may be conveyed by several cues make it possible for him to predict and analyze the printed grammatical patterns on the basis of identifying a few elements within it. The context in which the language occurs, created by the previous meanings he has gathered, allows him to predict the meaning that will follow. To comprehend in reading, then, the proficient reader predicts as he reads, selects only the most predictive cues, and samples the graphic cues as he tests out his predictions. When his predictions are not confirmed, then he engages at this time in greater visual analysis.

Teaching reading in the content areas, then, must go beyond the meeting of superficial visual requirements. Otherwise, the curriculum itself is likely to be of little importance to the student's life and the school, in short, will contiue to ignore the realities of reading and life surrounding the student. Hence, reading, as William Gray suggested years ago, must be perceived as an activity that permits students to find meaning in what otherwise would be mere facts. Thus, the discerning teacher of a content area uses in part the student's "self" as content, thereby placing the teaching of reading as a process in as broad a context as possible.

A second and related possibility for improving the teaching of reading in the content areas is the building of instruction upon significant leads from linguistics. In recent years, the impact of linguistics upon the teaching of reading has had a shattering effect, with many similar implications for improving the teaching of reading as those already stated. The linguist has buttressed the understanding of the process whereby the all-important concept is either illuminated or dulled by the manner in which it is expressed. In the content areas, overdependence on instructional methods and materials ignore recent insights into the nature of language and impairs the effective teaching of reading. Thus, there is a need for content teachers to become conscious not only of the concepts they are teaching, but how the concepts are expressed in printed language.

Two linguists, Postman and Weingartner (1967), urge content teachers to become language teachers as well, because learning how to learn means learning how to use verbal symbols. Students need to do certain things with language in the defining process, in the question-answer process, in the classifying process, and in the generalizing process. Education in how inquiries are made suggests that any teacher, regardless of the subject he is teaching is, or should be, a

language teacher. Not only is the inquiry process largely a language operation, but all subjects in the school curriculum are language.

However, certain findings in research show that students differ in language facility (Strickland, 1962) (Loban, 1963). These studies and numerous others also indicate that the student rated high in language ability tends to draw upon the rich resources of language, extending meaning through the use of complex forms, and by using a variety of words, patterns, and syntactic elements. In contrast, the student rated low in language ability tends to use fewer words and fewer complex forms. His sentences are typically short and simple, instead of extended, embedded, and combined. These studies likewise show a high correlation between a student's oral and written language facility and his ability to read. As the student with limited language facility interacts with print, he is likely to experience difficulty in understanding concepts when they are expressed in unfamiliar and complex grammatical forms.

The third possibility for improving reading in the content areas is developing ways of bridging the gap between the student's spoken language, experiences, and the infinite variety of patterns within printed language. The student's language ability provides the source for permitting him to be active and creative while learning to read. Students, encouraged to speak about content that interests them, reflect the cognitive and linguistic powers they already possess. Printed language has similar varieties and functions--to communicate and to do so in multiple situations.

ORAL TASK-SETTING EXPERIENCES

In an attempt to improve reading with tenth graders in a vocational-technical school, one teacher used the language and theory-based rational under discussion. In one reading class, for example, he taught students specializing in becoming auto mechanics, library aids, stationary engineers, beauticians,

chefs, and printers. Each day, the teacher visited the trade classes and shops of his students. His purpose was to assign each student an oral task: to explain how a piece of machinery worked, to describe how a particular job was accomplished, to clarify which tools should be used, for what tasks, and why. The variation among the fields of specialization yielded numerous topics for the teacher to use for assignments as oral tasks. Each oral task assigned was of immediate use to each student, for each task related specifically to the content each student was studying on the job and at that time. To illustrate, one day the teacher visited a boy training to become a stationary engineer and asked him to describe the boiler room. A transcription of the boy's response to the task follows.

> There are three huge boilers in this room, one which is not operating because the firebrick has broken away from the inside of it, and needs to be replaced. The two boilers on the right are used to send hot water to the pipes of the heating system of the school.
>
> These two twin tubular boilers are in two parts. The bottom part has pipes filled with hot water. It is heated by the hot blast of flames produced by the burning of oil. The hot water then goes up to the top part of the boiler and hits the baffle, that sheet-like appartus. The hot water surrounds the tubes in the upper part of the boiler and heats the air in the tubes. These tubes are made of steel and are surrounded with insulated material.

For this student, describing the boiler-room meant using verbal symbols to define, list, classify, and generalize. In reading classes, the same teacher frequently presented a printed transcription of the student's oral response to his trade shop task. Students read their own papers first. Then, working within small groups, they were encouraged to read their papers to each other. The teacher's purpose, of course, was to emphasize communication components in relation to one another. By combining their oral language with a written form of it, the teacher hoped to lead his students on to a greater understanding of concepts behind print and the complex patterns needed to express them. For the student low in reading ability each phase of this approach comes

one step closer to reading and understanding someone else's recorded ideas.

The range of topics varied on a daily basis and sometimes purposely. When the teacher was concerned with the student's limited understanding of a particular mode of expression, such as sequence, he assigned a "how to" oral task. The following list represents some kinds of oral tasks deliberately assigned by the teacher.

How to work with chemicals
How to give a permanent wave
How to clean oil strainers and burner tips
How to give a check reading
How to overhaul a car
How to operate a kluge
How to write over-due cars
How to shelve books
How to make a carrot cake
How to do different hair styles
How to apply eye make-up
How to give a facial
How to use the adjustable wrench
How to clean the tool room and pumps

As before, the students read printed copies of their papers aloud. During this time, students often interrupted each other to ask a question, sometimes about the meaning of a technical word, sometimes merely to make a technical correction. In subsequent group sessions, students started to question "sentence sense." Frequently, when the recorded syntax was weak and the expression awkward, they asked each other "what was meant" and for "more information"--in other words, to elaborate orally in order to clarify Whenever the students were in agreement with each other's suggestions, they were encouraged to write down the comment, for use in a written revision of their oral task.

WRITING AND GROUP REVISION

Writing is a neglected art in the content areas. Research has shown that less than two percent of lessons in some content areas is spent in writing. Through group writing activities, students together recommend readjustment in

form, as well as the qualifying of thought, the rephrasing and rearranging of muddled expressions, and many sentence-combining possibilities.

Students, however, do not always succeed at first in the manipulation of particular modes of expression in writing. Often this inability likewise creates reading difficulties and interruptions during reading. For example, the rather simple task of understanding how and why relationships are expressed in sequence poses, at times, problems for the student low in language ability. However, the teacher of vocational students previously mentioned observed that his students from the same field of specialization often completed a trade task jointly. In one reading class, the teacher asked three students in the same field of work to write a short paragraph that described their shop opportunities for that day. These young auto mechanics had just participated together in an "Operation of a Teardown." Below are three short examples of writing the teacher received from each student.

Operation of a Tear-Down

> We pulled the heads off a Plymouth and pulled 1st piston out of the head. We pulled the head first. After that, we took the exhaust manifold. Then we took the first piston.
>
> We pulled the heads off of a Plymouth and #1 piston and the crankshaft and oil pan. We started by pulling the head bolts. Then, we pulled the exhaust manifold. Then, the oil pan. After that, we pulled the head.
>
> We pulled the head off a Plymouth. Then, we pulled out the piston in No. 1 cylinder. We had to pull back the exhaust manifold.

Spotting the inconsistencies in listing, the short and simple sentences, and the lack of transitional information among the three papers, the teacher typed all three paragraphs on the same sheet. Then he asked the boys to read them to each other, to decide if they expressed differences in the steps a mechanic must follow in conducting an operation of a tear-down. Also, he asked them to discuss whether or not they had included all the steps. Finally, he asked them to write a group revision on which they all could agree, and reminded

them in the process to expand their sentences so that they told the reader what their technical words mean or do. After much discussion, debate, and rewriting, the boys submitted the following group revision.

> There are five steps involved in an operation of a tear-down. First, pull the exhaust manifold. An ex-exhaust manifold connects to the head of an engine. Second, remove the head. The head is connected to the block, a frame that holds the pistons in the crank. Third, remove the oil pan. Fourth, remove the #1 piston. Fifth, remove the crankshaft, the part that makes the piston function.

These kinds of learning activities help both the content teacher and the student perceive reading as communication. Schools today can no longer afford to push reading skills as activities by themselves. To improve reading in the content areas, instruction should be process-centered in the sense that students are frequently faced with content that affects them, and with the need to explore choices. The decisions they make as a result of reading must constantly be related to conscious directed behavior. In reading activities, there must be a degree of emphasis on situations to be met rather than on content to be mastered by itself. Reading activities provoked by process-centered situations, such as the one in the example given, will provide students with practice in communication, thinking, working with others, and creating (Edwards, 1967). The process of teaching reading in the content areas thus becomes an integral part of learning.

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